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| ART UNIT | PAPER NUMBER |
|---|---|
| 2828 | |

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/700,306 | FARR, MINA | |
| | Examiner | Art Unit | |
| | Rory Finneren | 2828 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *31 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-25* is/are rejected.

7)☒ Claim(s) *1 and 21* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 Oct. 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/25/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Objections*

Claim 1 is objected to because of the following informalities: There are extra characters at the end of line 8 of the claim. Appropriate correction is required.

Claim 21 is objected to because of the following informalities: There is a duplicate "that" on line 6 of the claim. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 11, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima (US 4,998,256).

With respect to claim 1, Ohshima teaches the claimed wavelength locker (Col. 2, lines 38-41) comprising the claimed surface (Fig. 5, #36), the claimed collimating lens (Fig. 5, #37) the claimed filter layer (Fig. 5, #392), the claimed first photosensitive area (Fig. 5, #38), and the claimed second photosensitive area (Fig. 5, #41); wherein the detection response of the first photosensitive area and the detection response of the second photosensitive area are used to determine the wavelength (Col. 13, lines 34-36) and power (Col. 4, lines 30-31) of the light emitted by the laser diode. Ohshima does teach the use of a collimating lens on either side of a filter layer (Fig.19, #15,

#40). Ohshima lacks the lens being placed between the reflective surface and the filter layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place a lens between the reflective surface and the filter layer, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Regarding claim 2, Ohshima teaches a first collimating element (Fig. 5, #37) and a second collimating element (Fig. 5, #40), the first photosensitive area (Fig. 5, #38) receiving collimated light from the first collimating element and the second photosensitive area (Fig. 5, #41) receiving collimated light from the second collimating element.

As to claim 11, Ohshima discloses the claimed wavelength locker, wherein the wavelength of the light emitted by the laser diode is determined from a differential between the detection response of the first photosensitive area and the detection response of the second photosensitive area (Col. 1, lines 47-52).

With respect to claim 16, Ohshima teaches a laser diode that emits light from front and back facets thereof (Fig. 3, #11); a controller module (Fig. 3, #22) that modifies the wavelength of the light based upon a determined wavelength of the light; and a wavelength locker that determines the wavelength of the light, comprising: a reflective surface that receives light from the back facet of the laser diode (Fig. 3, #16); a first lens that receives the light reflected by the reflective surface (Fig. 3, #15); a filter layer that includes a first filter, wherein the first filter receives the collimated light from the first lens (Fig. 3, #19); and a detector including a first photosensitive area (Fig. 3,

#21) and second photosensitive area (Fig. 3, #18), wherein the first photosensitive area receives light through the first filter to detect a first signal and the second photosensitive area receives light that does not pass through the first filter to detect a second signal, wherein the wavelength of the light is determined from differential between the first signal and the second signal (Col. 1, lines 47-52).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Cox (5,812,581).

As to claim 3, Ohshima teaches the claimed lens comprising a single collimating element (Fig.5, #35). Ohshima lacks the two photosensitive areas being arranged concentrically. Cox teaches two photosensitive areas which are concentrically arranged (Col. 7, lines 20-40; Fig.3). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima so that the photosensitive areas were arranged concentrically for the purpose of allowing a single beam of light to strike both areas.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Zheng (5,963,686).

With respect to claim 5, Ohshima teaches the claimed invention except for the second photosensitive area receiving light through an optically passive spacer that is adjacent the first filter. Zheng teaches a second photosensitive area (Fig. 4, #133) receiving light through an optically passive spacer (Fig. 4, #128) that is adjacent the first filter (Fig. 4, #130). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to include an optically

passive spacer adjacent to the first filter for the purpose of allowing for an unfiltered beam with which to compare the filtered beam.

Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Bruun-Larsen (US 20020141463 A1).

As to claim 7, Ohshima teaches the claimed invention except for the reflective surface comprising one or more dielectric filters. Bruun-Larsen teaches the use of a reflective surface with a dielectric filter (Fig. 1, "Dielectrically coated mirror"). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to use a dielectric filter as a reflective surface for the purpose of saving space by combining the reflector and filter.

With respect to claim 8, Ohshima teaches the claimed invention except for the dielectric filter on the beamsplitter. Bruun-Larsen teaches a beamsplitter coated with dielectric filter (Paragraph [0039], lines 1-4 and Fig. 2, "Dielectrically coated beamsplitter"). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to include a dielectric filter on a beamsplitter to obtain a beamsplitter capable of providing transmittance/reflection spectra having a very low variation in transmittance/reflection.

Regarding claim 9, Ohshima teaches the claimed invention except for the dielectric filter on an angled front facet of the beamsplitter. Bruun-Larsen teaches a beamsplitter coated with a dielectric filter (Paragraph [0039], lines 1-4 and Fig. 2, "Dielectrically coated beamsplitter"). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to include a

dielectric filter on an angled front facet of the beamsplitter to obtain a beamsplitter capable of providing transmittance/reflection spectra having a very low variation in transmittance/reflection.

With respect to claim 10, Ohshima teaches the claimed invention except for the dielectric filter on an angled back facet of the beamsplitter. Bruun-Larsen teaches a beamsplitter coated with a dielectric filter (Paragraph [0039], lines 1-4 and Fig. 2, "Dielectrically coated beamsplitter"). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to include a dielectric filter on an angled back facet of the beamsplitter to obtain a beamsplitter capable of providing transmittance/reflection spectra having a very low variation in transmittance/reflection.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Munks (6,587,214).

Regarding claim 12, Ohshima teaches the claimed invention except for the power of the light emitted by the laser diode being determined from a sum of the detection response of the first photosensitive area and the detection response of the second photosensitive area. Munks teaches a device that determines the power of the light emitted by a laser diode from a sum of the detection response of two photosensitive areas (Col. 3, lines 6-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima in order to determine the power of the light from a sum of the detection response of the first and second

photosensitive areas for the purpose of monitoring the power in a way which is independent from changes in wavelength..

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Kirkby (4,583,227).

With respect to claim 13, Ohshima teaches a power monitor photodiode that receives light from a back facet diode (Fig. 5, #38), wherein the power monitor diode determines the power of the light (Col. 4, lines 30-31). Ohshima further teaches a filter layer that receives the collimated light from the lens (Fig. 5, #392, #393). Ohshima also teaches the claimed detector comprising a photosensitive area (Fig. 5, #41).

Ohshima further teaches a collimating lens (Fig. 5, #35). Ohshima lacks the lens being placed between the reflective surface and the filter layer. It would have been obvious to one of ordinary skill in the art at the time the invention was made to place a lens between the reflective surface and the filter layer, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

Ohshima does not teach the wavelength locker being mounted on a submount with a laser diode. Kirkby teaches the use of a submount (Fig. 4, #31). It would have been obvious to one skilled in the art at the time of the invention to modify the teaching of Ohshima to mount the wavelength locker and the laser diode on a submount so as to minimize any straining of the diode (Col. 4, lines 57-60).

Ohshima does not teach a reflective surface of the power monitor photodiode that receives and redirects the light. Kirkby teaches an external surface of a reflector

comprising a photodetector adapted to monitor the output power of a laser (Col. 10, Claim #4). It would have been obvious to one skilled in the art at the time of the invention to modify the teaching of Ohshima to include a reflective surface of the power monitor photodiode for the purpose of redirecting the light to another optical component.

Claims 6, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Nolan (3,725,817).

Regarding claim 6, Ohshima teaches the claimed invention except for the reflective surface comprising a prism. Nolan teaches a reflective surface comprising a prism (Fig. 5, #71 and Col.7, lines 1-4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to use a prism as a reflective surface for the purpose of preventing the absorptive losses of a mirror.

Regarding claim 17, Ohshima discloses the claimed invention except for the reflective surface comprising a prism. Nolan teaches a reflective surface comprising a prism (Fig. 5, #71 and Col. 7, lines 1-4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to use a prism as a reflective surface for the purpose of preventing the absorptive losses of a mirror.

As to claim 18, Ohshima teaches a second lens (Fig.5, #37) that receives a second portion of the light (Fig. 5, S3), wherein the second lens collimates the second portion of the light; wherein the second photosensitive area (Fig. 5, #38) receives the

second portion of the light through the second lens. Ohshima lacks prism as a reflective surface. Nolan teaches a reflective surface comprising a prism (Fig. 5, #71 and Col. 7, lines 1-4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to use a prism as a reflective surface for the purpose of preventing the absorptive losses of a mirror.

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Flanders (6,366,592).

With respect to claim 19, Ohshima teaches the claimed invention except for the laser diode being mounted upon a laser diode submount and a thermoelectric cooler upon which the wavelength locker and the laser diode submount are mounted. Flanders teaches a laser diode (Fig.1, #116) mounted upon a laser diode submount (Fig.1, #105) and a thermoelectric cooler upon which the wavelength locker and the laser diode submount are mounted (Col. 3, lines 64-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to mount a laser diode on a laser diode submount so as to minimize any straining of the diode and to mount the wavelength locker and laser diode submount on a thermoelectric cooler for the purpose of being able to control the temperature of the diode, and thus the wavelength of the output beam.

Regarding claim 20, Ohshima teaches the claimed invention except for the controller in communication with each of the detector and the thermoelectric cooler, wherein the controller controls the temperature of the thermoelectric cooler based upon the wavelength of the light as detected by the detector. Flanders teaches a controller

that controls the temperature of the thermoelectric cooler based upon the wavelength of the light detected by the detector (Col. 5, lines 33-46). It would have been obvious to one skilled in the art at the time of the invention to modify the teaching of Ohshima to include a thermoelectric cooler controlled by a controller based upon the wavelength of the light detected by the detector for the purpose of tuning the wavelength of the laser based upon the detected output wavelength.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Perry (US 20020001321 A1).

As to claim 21, Ohshima teaches the claimed invention except for a first mirror that receives light from the front facet of a laser diode; a lens that receives the reflected light from the first mirror and collimates or focuses the light; and a second mirror that receives the light from the lens and reflects the light in a desired direction towards other optical components. Perry teaches a first mirror that receives light from the front facet of a laser diode (Fig. 4, #48); a lens that receives reflected light from the first mirror and collimates or focuses the light (Fig. 4, "Lens"); and a second mirror that receives the light from the lens and reflects the light in a desired direction towards other optical components (Fig. 4, mirror following "Lens" in beam path). It would have been obvious to one skilled in the art at the time of the invention to modify the teaching of Ohshima to include a first mirror, a lens, and a second mirror for the purpose of directing the laser beam to other optical components.

Claims 4 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima in view of Munks (6,289,028).

With respect to claim 4, Ohshima teaches the claimed invention except for a second filter, wherein the second filter has a transmission response that is different from a transmission response of the first filter and wherein the second photosensitive area receives light through the second filter. Munks teaches a second filter (Fig. 1, #34), wherein the second filter has a transmission response that is different from a transmission response of the first filter (Col. 2, lines 49-57) and wherein the second photosensitive area receives light through the second filter (Fig. 1, #38, #42). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teaching of Ohshima to include a second filter for the purpose of changing the transmission response ratio between the first and second photodetectors.

Regarding claim 23, Ohshima teaches the claimed method, except for prior to passing the second portion of light onto a second photosensitive surface, passing the second portion of light through a second filter. Munks teaches passing the second portion of light through a second filter prior to passing it onto a second photosensitive surface (Fig.1, #30, #34). It would have been obvious to one skilled in the art at the time of the invention to modify the teaching of Ohshima so that the light passes through a second filter before passing onto the second photosensitive surface for the purpose of changing the transmission response ratio between the first and second photodetectors.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14,15, 22, 24, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohshima (4,998,256).

As to claim 14, Ohshima teaches the claimed wavelength locker comprising: a first photosensitive area (Fig. 5, #41); a second photosensitive area (Fig.5, #38); means for receiving light from a laser diode and directing a first portion of the light onto the first photosensitive area and directing a second portion of the light onto the second photosensitive area (Fig. 5, #36); and an optical filter (Fig. 5, #392, #393) that modifies the portion of the light that is directed to the first photosensitive area; wherein the detection response of the first photosensitive area and the detection response of the second photosensitive area are used to determine the wavelength (Col 13, lines 34-36) and power (Col.4, lines 30-31) of the light emitted by the laser diode.

Regarding claim 15, Ohshima teaches the claimed wavelength locker, wherein the means for receiving light from a back facet of a laser diode and directing a first portion of the light onto the first photosensitive area and a second portion of the light onto the second photosensitive area comprises a mirror (Fig. 3, #191, #192), a reflective surface (Fig. 5, #36), a beamsplitter (Fig. 5, #36), and a lens(Fig. 5, #35, #38, #40) .

With respect to claim 22, Ohshima teaches the claimed method for determining the wavelength of light emitted by a laser diode, the method comprising: receiving light from the back facet of a laser diode (Fig.1, S2 and Col.1, line 19); separating the light into a first portion and a second portion (Col.1, line 21); passing the first portion of light through a first filter and onto a photosensitive surface (Fig.1, S4 and Col.1 lines 24-27); passing the second portion of light onto a second photosensitive surface (Fig.1, S3 and Col.1, lines 22-23); and determining the wavelength of the light emitted by the laser diode from a differential between the detection response of the first photosensitive surface and the detection response of the second photosensitive surface (Col.1, lines 47-52).

As to claim 24, Ohshima teaches the claimed method for using the output of the first photosensitive surface and the second photosensitive surface to determine the power of the light emitted by the laser diode (Col. 4, lines 30-31).

Regarding claim 25, Ohshima teaches the claimed method comprising, prior to passing the first portion of light through a first filter, passing the first portion of light through a collimating lens (Fig. 5, #35).

## ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rory Finneren whose telephone number is (571) 272-2243. The examiner can normally be reached on Mon. - Fri. 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Oh Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

rbf

MINSUN OH HARVEY
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